

WHAT IS CLAIMED IS:

1. A method of operating a digital micromirror device having at least one micromirror, the method comprising:

applying a reset voltage pulse to the micromirror;

applying an offset voltage to the micromirror immediately after the reset voltage pulse;

5 applying a bias voltage to the micromirror immediately after the offset voltage, wherein the bias voltage is applied for a damping delay period;

applying a triangular damping pulse to the micromirror after the damping delay period, whereby the triangular damping pulse reduces a transient resonant vibration of the micromirror on a first landing plate; and

10 reapplying the bias voltage to the micromirror.

2. The method of claim 1, wherein the reset voltage pulse causes the micromirror to launch from a second landing plate.

3. The method of claim 2, wherein the triangular damping pulse is applied at about a time when the micromirror is landing on the first landing plate.

15 4. The method of claim 1, further comprising applying a second triangular damping pulse to the micromirror before the reapplying of the bias voltage.

5. The method of claim 1, wherein the vibration has a resonant frequency of between about 450 kHz and about 550 kHz, and the width of the triangular damping pulse is between about 3.64 microseconds and 4.44 microseconds.

6. The method of claim 1, wherein the reset voltage is about –26 volts, the offset voltage is about 7 volts, and the bias voltage is about 24 volts.
7. The method of claim 6, wherein the triangular damping pulse has a peak voltage of greater than about 30 volts.

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8. A method of operating a digital micromirror device having at least one micromirror, the method comprising:

applying a reset voltage pulse to the micromirror, wherein the reset voltage pulse causes the micromirror to launch from a landing plate;

5 applying an offset voltage to the micromirror immediately after the reset voltage pulse, wherein the offset voltage is applied for a damping delay period, wherein the micromirror launches and is moving away from the landing plate before an expiration of the damping delay period;

10 applying a triangular damping pulse to the micromirror immediately after the offset voltage; and

reapplying the offset voltage to the micromirror, whereby the triangular damping pulse reduces oscillation of the micromirror about a neutral position.

9. The method of claim 8, wherein the triangular damping pulse has a same polarity as the reset voltage pulse.

15 10. The method of claim 8, wherein the triangular damping pulse has an opposite polarity from the reset voltage pulse.

11. The method of claim 8, further comprising:

loading an address state for the micromirror during the reapplying of the offset voltage;  
and

20 applying a bias voltage to the micromirror, wherein the micromirror assumes the address state.

12. The method of claim 8, wherein the reset voltage is about -26 volts and the offset voltage is about 7 volts.

13. The method of claim 8, wherein the damping delay period is greater than 1 microsecond.

14. The method of claim 13, wherein the damping delay period is about 1.6 microseconds

5 and the damping pulse is about 3.9 microseconds long.